

SEQUENCE LISTING

AP20 Rec'd PCT/PTO 09 JUN 2006

<110> Ohtomo, Toshihiko
Yabuta, Naohiro
Tsunoda, Hiroyuki
Tsuchiya, Masayuki

<120> Methods for enhancing antibody activity

<130> 14875-164US1

<150> PCT/JP2004/018493

<151> 2004-12-10

<150> JP 2003-415760

<151> 2003-12-12

<160> 28

<170> PatentIn version 3.1

<210> 1

<211> 1924

<212> DNA

<213> Macaca fascicularis

<220>

<221> CDS

<222> (11)..(1918)

<223>

<400> 1

gaattccacc	atg	ccc	tcc	tgg	gcc	ctc	ttc	atg	gtc	acc	tcc	tgc	ctc	49
	Met	Pro	Ser	Trp	Ala	Leu	Phe	Met	Val	Thr	Ser	Cys	Leu	
1				5					10					

ctc	ctg	gcc	cct	caa	aac	ctg	gcc	caa	gtc	agc	agc	caa	gat	gtc	tcc	97
Leu	Leu	Ala	Pro	Gln	Asn	Leu	Ala	Gln	Val	Ser	Ser	Gln	Asp	Val	Ser	
15					20					25						

ttg	ctg	gcc	tcg	gac	tca	gag	ccc	ctg	aag	tgt	ttc	tcc	cga	aca	ttt	145
Leu	Leu	Ala	Ser	Asp	Ser	Glu	Pro	Leu	Lys	Cys	Phe	Ser	Arg	Thr	Phe	
30				35					40				45			

gag	gac	ctc	act	tgc	ttc	tgg	gat	gag	gaa	gag	gca	gca	ccc	agt	ggg	193
Glu	Asp	Leu	Thr	Cys	Phe	Trp	Asp	Glu	Glu	Glu	Ala	Ala	Pro	Ser	Gly	
			50					55						60		

aca	tac	cag	ctg	ctg	tat	gcc	tac	ccg	ggg	gag	aag	ccc	cgt	gcc	tgc	241
Thr	Tyr	Gln	Leu	Leu	Tyr	Ala	Tyr	Pro	Gly	Glu	Lys	Pro	Arg	Ala	Cys	
		65				70						75				

ccc	ctg	agt	tct	cag	agc	gtg	ccc	cgc	ttt	gga	acc	cga	tac	gtg	tgc	289
Pro	Leu	Ser	Ser	Gln	Ser	Val	Pro	Arg	Phe	Gly	Thr	Arg	Tyr	Val	Cys	
	80					85						90				

cag	ttt	cca	gcc	cag	gaa	gaa	gtg	cgt	ctc	ttc	tct	ccg	ctg	cac	ctc	337
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Gln	Phe	Pro	Ala	Gln	Glu	Glu	Val	Arg	Leu	Phe	Ser	Pro	Leu	His	Leu	
95						100					105					
tgg	gtg	aag	aat	gtg	ttc	cta	aac	cag	act	cag	att	cag	cga	gtc	ctc	385
Trp	Val	Lys	Asn	Val	Phe	Leu	Asn	Gln	Thr	Gln	Ile	Gln	Arg	Val	Leu	
110					115					120					125	
ttt	gtg	gac	agt	gta	ggc	ctg	ccg	gct	ccc	ccc	agt	atc	atc	aag	gcc	433
Phe	Val	Asp	Ser	Val	Gly	Leu	Pro	Ala	Pro	Pro	Ser	Ile	Ile	Lys	Ala	
				130					135					140		
atg	ggt	ggg	agc	cag	cca	ggg	gaa	ctt	cag	atc	agc	tgg	gag	gcc	cca	481
Met	Gly	Gly	Ser	Gln	Pro	Gly	Glu	Leu	Gln	Ile	Ser	Trp	Glu	Ala	Pro	
			145					150					155			
gct	cca	gaa	atc	agt	gat	ttc	ctg	agg	tac	gaa	ctc	cgc	tat	ggc	ccc	529
Ala	Pro	Glu	Ile	Ser	Asp	Phe	Leu	Arg	Tyr	Glu	Leu	Arg	Tyr	Gly	Pro	
		160					165					170				
aaa	gat	ctc	aag	aac	tcc	act	ggt	ccc	acg	gtc	ata	cag	ttg	atc	gcc	577
Lys	Asp	Leu	Lys	Asn	Ser	Thr	Gly	Pro	Thr	Val	Ile	Gln	Leu	Ile	Ala	
	175					180					185					
aca	gaa	acc	tgc	tgc	cct	gct	ctg	cag	agg	cca	cac	tca	gcc	tct	gct	625
Thr	Glu	Thr	Cys	Cys	Pro	Ala	Leu	Gln	Arg	Pro	His	Ser	Ala	Ser	Ala	
190					195					200					205	
ctg	gac	cag	tct	cca	tgt	gct	cag	ccc	aca	atg	ccc	tgg	caa	gat	gga	673
Leu	Asp	Gln	Ser	Pro	Cys	Ala	Gln	Pro	Thr	Met	Pro	Trp	Gln	Asp	Gly	
				210				215						220		
cca	aag	cag	acc	tcc	cca	act	aga	gaa	gct	tca	gct	ctg	aca	gca	gtg	721
Pro	Lys	Gln	Thr	Ser	Pro	Thr	Arg	Glu	Ala	Ser	Ala	Leu	Thr	Ala	Val	
			225					230					235			
ggt	gga	agc	tgc	ctc	atc	tca	gga	ctc	cag	cct	ggc	aac	tcc	tac	tgg	769
Gly	Gly	Ser	Cys	Leu	Ile	Ser	Gly	Leu	Gln	Pro	Gly	Asn	Ser	Tyr	Trp	
		240					245					250				
ctg	cag	ctg	cgc	agc	gaa	cct	gat	ggg	atc	tcc	ctc	ggt	ggc	tcc	tgg	817
Leu	Gln	Leu	Arg	Ser	Glu	Pro	Asp	Gly	Ile	Ser	Leu	Gly	Gly	Ser	Trp	
	255					260					265					
gga	tcc	tgg	tcc	ctc	cct	gtg	act	gtg	gac	ctg	cct	gga	gat	gca	gtg	865
Gly	Ser	Trp	Ser	Leu	Pro	Val	Thr	Val	Asp	Leu	Pro	Gly	Asp	Ala	Val	
270					275					280					285	
gca	att	gga	ctg	caa	tgc	ttt	acc	ttg	gac	ctg	aag	aat	gtt	acc	tgt	913
Ala	Ile	Gly	Leu	Gln	Cys	Phe	Thr	Leu	Asp	Leu	Lys	Asn	Val	Thr	Cys	
				290					295					300		
caa	tgg	cag	caa	gag	gac	cat	gct	agt	tcc	caa	ggt	ttc	ttc	tac	cac	961
Gln	Trp	Gln	Gln	Glu	Asp	His	Ala	Ser	Ser	Gln	Gly	Phe	Phe	Tyr	His	
			305					310					315			
agc	agg	gca	cgg	tgc	tgc	ccc	aga	gac	agg	tac	ccc	atc	tgg	gag	gac	1009
Ser	Arg	Ala	Arg	Cys	Cys	Pro	Arg	Asp	Arg	Tyr	Pro	Ile	Trp	Glu	Asp	

320	325	330	
tgt gaa gag gaa gag aaa aca aat cca gga tta cag acc cca cag ttc Cys Glu Glu Glu Glu Lys Thr Asn Pro Gly Leu Gln Thr Pro Gln Phe 335 340 345			1057
tct cgc tgc cac ttc aag tca cga aat gac agc gtt att cac atc ctt Ser Arg Cys His Phe Lys Ser Arg Asn Asp Ser Val Ile His Ile Leu 350 355 360 365			1105
gtg gag gtg acc aca gcc ctg ggt gct gtt cac agt tac ctg ggc tcc Val Glu Val Thr Thr Ala Leu Gly Ala Val His Ser Tyr Leu Gly Ser 370 375 380			1153
cct ttc tgg atc cac cag gct gtg cgc ctc ccc acc cca aac ttg cac Pro Phe Trp Ile His Gln Ala Val Arg Leu Pro Thr Pro Asn Leu His 385 390 395			1201
tgg agg gag atc tcc agc ggg cat ctg gaa ttg gag tgg cag cac cca Trp Arg Glu Ile Ser Ser Gly His Leu Glu Leu Glu Trp Gln His Pro 400 405 410			1249
tca tcc tgg gca gcc caa gag acc tgc tat caa ctc cga tac aca gga Ser Ser Trp Ala Ala Gln Glu Thr Cys Tyr Gln Leu Arg Tyr Thr Gly 415 420 425			1297
gaa ggc cat cag gac tgg aag gtg ctg gag ccg cct ctc ggg gcc cga Glu Gly His Gln Asp Trp Lys Val Leu Glu Pro Pro Leu Gly Ala Arg 430 435 440 445			1345
gga ggg acc ctg gag ctg cgc ccg cga tct cgc tac cgt tta cag ctg Gly Gly Thr Leu Glu Leu Arg Pro Arg Ser Arg Tyr Arg Leu Gln Leu 450 455 460			1393
cgc gcc agg ctc aat ggc ccc acc tac caa ggt ccc tgg agc tcg tgg Arg Ala Arg Leu Asn Gly Pro Thr Tyr Gln Gly Pro Trp Ser Ser Trp 465 470 475			1441
tcg gac cca gct agg gtg gag acc gcc acc gag acc gcc tgg att tcc Ser Asp Pro Ala Arg Val Glu Thr Ala Thr Glu Thr Ala Trp Ile Ser 480 485 490			1489
ttg gtg acc gct ctg ctg cta gtg ctg ggc ctc agc gcc gtc ctg ggc Leu Val Thr Ala Leu Leu Leu Val Leu Gly Leu Ser Ala Val Leu Gly 495 500 505			1537
ctg ctg ctg ctg agg tgg cag ttt cct gca cac tac agg aga ctg agg Leu Leu Leu Leu Arg Trp Gln Phe Pro Ala His Tyr Arg Arg Leu Arg 510 515 520 525			1585
cat gcc ctg tgg ccc tca ctt cca gat ctg cac cga gtc cta ggc cag His Ala Leu Trp Pro Ser Leu Pro Asp Leu His Arg Val Leu Gly Gln 530 535 540			1633
tac ctt agg gac act gca gcc ctg agt ccg ccc aag gcc aca gtc tca Tyr Leu Arg Asp Thr Ala Ala Leu Ser Pro Pro Lys Ala Thr Val Ser 545 550 555			1681

gat acc tgt gaa gaa gtg gaa ccc agc ctc ctt gaa atc ctc ccc aag	1729
Asp Thr Cys Glu Glu Val Glu Pro Ser Leu Leu Glu Ile Leu Pro Lys	
560 565 570	
tcc tca gag agg act cct ttg ccc ctg tgt tcc tcc cag tcc cag atg	1777
Ser Ser Glu Arg Thr Pro Leu Pro Leu Cys Ser Ser Gln Ser Gln Met	
575 580 585	
gac tac cga aga ttg cag cct tct tgc ctg ggg acc atg ccc ctg tct	1825
Asp Tyr Arg Arg Leu Gln Pro Ser Cys Leu Gly Thr Met Pro Leu Ser	
590 595 600 605	
gtg tgc cca ccc atg gct gag tca ggg tcc tgc tgt acc acc cac att	1873
Val Cys Pro Pro Met Ala Glu Ser Gly Ser Cys Cys Thr Thr His Ile	
610 615 620	
gcc aac cat tcc tac cta cca cta agc tat tgg cag cag cct tga	1918
Ala Asn His Ser Tyr Leu Pro Leu Ser Tyr Trp Gln Gln Pro	
625 630 635	
gtcgac	1924
<210> 2	
<211> 635	
<212> PRT	
<213> Macaca fascicularis	
<400> 2	
Met Pro Ser Trp Ala Leu Phe Met Val Thr Ser Cys Leu Leu Leu Ala	
1 5 10 15	
Pro Gln Asn Leu Ala Gln Val Ser Ser Gln Asp Val Ser Leu Leu Ala	
20 25 30	
Ser Asp Ser Glu Pro Leu Lys Cys Phe Ser Arg Thr Phe Glu Asp Leu	
35 40 45	
Thr Cys Phe Trp Asp Glu Glu Glu Ala Ala Pro Ser Gly Thr Tyr Gln	
50 55 60	
Leu Leu Tyr Ala Tyr Pro Gly Glu Lys Pro Arg Ala Cys Pro Leu Ser	
65 70 75 80	
Ser Gln Ser Val Pro Arg Phe Gly Thr Arg Tyr Val Cys Gln Phe Pro	
85 90 95	
Ala Gln Glu Glu Val Arg Leu Phe Ser Pro Leu His Leu Trp Val Lys	
100 105 110	
Asn Val Phe Leu Asn Gln Thr Gln Ile Gln Arg Val Leu Phe Val Asp	
115 120 125	
Ser Val Gly Leu Pro Ala Pro Pro Ser Ile Ile Lys Ala Met Gly Gly	
130 135 140	
Ser Gln Pro Gly Glu Leu Gln Ile Ser Trp Glu Ala Pro Ala Pro Glu	

145		150		155		160
Ile Ser Asp Phe Leu Arg Tyr Glu Leu Arg Tyr Gly Pro Lys Asp Leu						
		165		170		175
Lys Asn Ser Thr Gly Pro Thr Val Ile Gln Leu Ile Ala Thr Glu Thr						
		180		185		190
Cys Cys Pro Ala Leu Gln Arg Pro His Ser Ala Ser Ala Leu Asp Gln						
		195		200		205
Ser Pro Cys Ala Gln Pro Thr Met Pro Trp Gln Asp Gly Pro Lys Gln						
		210		215		220
Thr Ser Pro Thr Arg Glu Ala Ser Ala Leu Thr Ala Val Gly Gly Ser						
225		230		235		240
Cys Leu Ile Ser Gly Leu Gln Pro Gly Asn Ser Tyr Trp Leu Gln Leu						
		245		250		255
Arg Ser Glu Pro Asp Gly Ile Ser Leu Gly Gly Ser Trp Gly Ser Trp						
		260		265		270
Ser Leu Pro Val Thr Val Asp Leu Pro Gly Asp Ala Val Ala Ile Gly						
		275		280		285
Leu Gln Cys Phe Thr Leu Asp Leu Lys Asn Val Thr Cys Gln Trp Gln						
		290		295		300
Gln Glu Asp His Ala Ser Ser Gln Gly Phe Phe Tyr His Ser Arg Ala						
305		310		315		320
Arg Cys Cys Pro Arg Asp Arg Tyr Pro Ile Trp Glu Asp Cys Glu Glu						
		325		330		335
Glu Glu Lys Thr Asn Pro Gly Leu Gln Thr Pro Gln Phe Ser Arg Cys						
		340		345		350
His Phe Lys Ser Arg Asn Asp Ser Val Ile His Ile Leu Val Glu Val						
		355		360		365
Thr Thr Ala Leu Gly Ala Val His Ser Tyr Leu Gly Ser Pro Phe Trp						
		370		375		380
Ile His Gln Ala Val Arg Leu Pro Thr Pro Asn Leu His Trp Arg Glu						
385		390		395		400
Ile Ser Ser Gly His Leu Glu Leu Glu Trp Gln His Pro Ser Ser Trp						
		405		410		415
Ala Ala Gln Glu Thr Cys Tyr Gln Leu Arg Tyr Thr Gly Glu Gly His						
		420		425		430
Gln Asp Trp Lys Val Leu Glu Pro Pro Leu Gly Ala Arg Gly Gly Thr						
		435		440		445
Leu Glu Leu Arg Pro Arg Ser Arg Tyr Arg Leu Gln Leu Arg Ala Arg						

450	455	460
Leu Asn Gly Pro Thr Tyr	Gln Gly Pro Trp Ser	Ser Trp Ser Asp Pro
465	470	475 480
Ala Arg Val Glu Thr Ala Thr Glu Thr	Ala Trp Ile Ser Leu Val Thr	
	485 490	495
Ala Leu Leu Leu Val Leu Gly Leu Ser Ala Val Leu Gly Leu Leu Leu		
	500 505	510
Leu Arg Trp Gln Phe Pro Ala His Tyr Arg Arg Leu Arg His Ala Leu		
	515 520	525
Trp Pro Ser Leu Pro Asp Leu His Arg Val Leu Gly Gln Tyr Leu Arg		
	530 535	540
Asp Thr Ala Ala Leu Ser Pro Pro Lys Ala Thr Val Ser Asp Thr Cys		
	545 550	555 560
Glu Glu Val Glu Pro Ser Leu Leu Glu Ile Leu Pro Lys Ser Ser Glu		
	565 570	575
Arg Thr Pro Leu Pro Leu Cys Ser Ser Gln Ser Gln Met Asp Tyr Arg		
	580 585	590
Arg Leu Gln Pro Ser Cys Leu Gly Thr Met Pro Leu Ser Val Cys Pro		
	595 600	605
Pro Met Ala Glu Ser Gly Ser Cys Cys Thr Thr His Ile Ala Asn His		
	610 615	620
Ser Tyr Leu Pro Leu Ser Tyr Trp Gln Gln Pro		
	625 630	635

<210> 3
 <211> 24
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized sequence

<400> 3
 caggggccag tggatagact gatg

24

<210> 4
 <211> 23
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized sequence

<400> 4
 gctcactgga tggagggaag atg

23

<210> 5
 <211> 411
 <212> DNA
 <213> Mus musculus

<220>
 <221> CDS
 <222> (1)..(411)
 <223>

<400> 5
 atg gaa tgg cct ttg atc ttt ctc ttc ctc ctg tca gga act gca ggt 48
 Met Glu Trp Pro Leu Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 gtc cac tcc cag gtt cag ctg cag cag tct gga cct gag ctg gtg aag 96
 Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys
 20 25 30
 cct ggg gcc tca gtg aag att tcc tgc aag gct tct ggc tat gca ttc 144
 Pro Gly Ala Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ala Phe
 35 40 45
 act aac tcc tgg atg aac tgg gtg aag cag agg cct gga aag ggt ctt 192
 Thr Asn Ser Trp Met Asn Trp Val Lys Gln Arg Pro Gly Lys Gly Leu
 50 55 60
 gag tgg att gga cgg att tat cct gga gat gga gaa act atc tac aat 240
 Glu Trp Ile Gly Arg Ile Tyr Pro Gly Asp Gly Glu Thr Ile Tyr Asn
 65 70 75 80
 ggg aaa ttc agg gtc aag gcc aca ctg act gca gac aaa tcc tcc agc 288
 Gly Lys Phe Arg Val Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser
 85 90 95
 aca gcc tac atg gat atc agc agc ctg aca tct gag gac tct gcg gtc 336
 Thr Ala Tyr Met Asp Ile Ser Ser Leu Thr Ser Glu Asp Ser Ala Val
 100 105 110
 tac ttc tgt gca aga ggc tat gat gat tac tcg ttt gct tac tgg ggc 384
 Tyr Phe Cys Ala Arg Gly Tyr Asp Asp Tyr Ser Phe Ala Tyr Trp Gly
 115 120 125
 caa ggg act ctg gtc act gtc tct gca 411
 Gln Gly Thr Leu Val Thr Val Ser Ala
 130 135

<210> 6
 <211> 137
 <212> PRT
 <213> Mus musculus

<400> 6
 Met Glu Trp Pro Leu Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly
 1 5 10 15
 Val His Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys

20					25					30					
Pro	Gly	Ala	Ser	Val	Lys	Ile	Ser	Cys	Lys	Ala	Ser	Gly	Tyr	Ala	Phe
		35					40					45			
Thr	Asn	Ser	Trp	Met	Asn	Trp	Val	Lys	Gln	Arg	Pro	Gly	Lys	Gly	Leu
	50					55					60				
Glu	Trp	Ile	Gly	Arg	Ile	Tyr	Pro	Gly	Asp	Gly	Glu	Thr	Ile	Tyr	Asn
65					70					75					80
Gly	Lys	Phe	Arg	Val	Lys	Ala	Thr	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Ser
				85					90					95	
Thr	Ala	Tyr	Met	Asp	Ile	Ser	Ser	Leu	Thr	Ser	Glu	Asp	Ser	Ala	Val
			100					105					110		
Tyr	Phe	Cys	Ala	Arg	Gly	Tyr	Asp	Asp	Tyr	Ser	Phe	Ala	Tyr	Trp	Gly
		115					120					125			
Gln	Gly	Thr	Leu	Val	Thr	Val	Ser	Ala							
	130					135									

<210> 7
 <211> 396
 <212> DNA
 <213> Mus musculus

<220>
 <221> CDS
 <222> (1)..(396)
 <223>

<400> 7	
atg agg tgc cta gct gag ttc ctg ggg ctg ctt gtg ttc tgg att cct	48
Met Arg Cys Leu Ala Glu Phe Leu Gly Leu Leu Val Phe Trp Ile Pro	
1 5 10 15	
gga gcc att ggg gat att gtg atg act cag gct gca ccc tct ata cct	96
Gly Ala Ile Gly Asp Ile Val Met Thr Gln Ala Ala Pro Ser Ile Pro	
20 25 30	
gtc act cct gga gag tca gta tcc atc tcc tgt agg tct agt aag agt	144
Val Thr Pro Gly Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser	
35 40 45	
ctc ctg cat agt aat ggc aac act tac ttg tat tgg ttc ctg cag agg	192
Leu Leu His Ser Asn Gly Asn Thr Tyr Leu Tyr Trp Phe Leu Gln Arg	
50 55 60	
cca ggc cag tct cct caa ctc ctg ata tat cgg atg tcc aac ctt gcc	240
Pro Gly Gln Ser Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala	
65 70 75 80	
tca gga gtc cca gat agg ttc agt ggc agt ggg tca gga act gct ttc	288
Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Ala Phe	
85 90 95	

aca ctg aga atc agt aga gtg gag gct gag gat gtg ggt gtt tat tac 336
 Thr Leu Arg Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
 100 105 110

tgt atg caa cat ata gaa tat cct ttt acg ttc gga tcg ggg acc aag 384
 Cys Met Gln His Ile Glu Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys
 115 120 125

ctg gaa ata aaa 396
 Leu Glu Ile Lys
 130

<210> 8
 <211> 132
 <212> PRT
 <213> Mus musculus

<400> 8
 Met Arg Cys Leu Ala Glu Phe Leu Gly Leu Leu Val Phe Trp Ile Pro
 1 5 10 15

Gly Ala Ile Gly Asp Ile Val Met Thr Gln Ala Ala Pro Ser Ile Pro
 20 25 30

Val Thr Pro Gly Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser
 35 40 45

Leu Leu His Ser Asn Gly Asn Thr Tyr Leu Tyr Trp Phe Leu Gln Arg
 50 55 60

Pro Gly Gln Ser Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala
 65 70 75 80

Ser Gly Val Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Ala Phe
 85 90 95

Thr Leu Arg Ile Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr
 100 105 110

Cys Met Gln His Ile Glu Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys
 115 120 125

Leu Glu Ile Lys
 130

<210> 9
 <211> 30
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 9
 tagaattcca ccatggaatg gcctttgatc

<210> 10
 <211> 56
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 10
 agcctgagtc atcacaatat ccgatccgcc tccacctgca gagacagtga ccagag 56

<210> 11
 <211> 56
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 11
 actctggtca ctgtctctgc aggtggaggc ggatcggata ttgtgatgac tcaggc 56

<210> 12
 <211> 60
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 12
 attgcggccg cttatcactt atcgtcgtca tccttgtagt cttttatttc cagcttggtc 60

<210> 13
 <211> 8
 <212> PRT
 <213> Artificial

<220>
 <223> an artificially synthesized FLAG tag sequence

<400> 13
 Asp Tyr Lys Asp Asp Asp Asp Lys
 1 5

<210> 14
 <211> 85
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 14
 tagaattcca ccatggaatg gcctttgatc tttctcttcc tcctgtcagg aactgcaggt 60

gtccactccc aggttcagct gcagc 85

<210> 15
 <211> 82
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 15
 tgagtcatca caatatccga tccgccacca cccgaaccac caccacccga accaccacca 60
 cctgcagaga cagtgaccag ag 82

<210> 16
 <211> 82
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 16
 tggtcactgt ctctgcaggt ggtggtggtt cgggtggtgg tggttcgggt ggtggcggat 60
 cggatattgt gatgactcag gc 82

<210> 17
 <211> 25
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 17
 caggttcagc tgcagcagtc tggac 25

<210> 18
 <211> 81
 <212> DNA
 <213> Artificial

<220>
 <223> an artificially synthesized primer sequence

<400> 18
 gctgcagctg aacctgcgat ccaccgcctc ccgaaccacc accacccgat ccaccacctc 60
 cttttatttc cagcttggtc c 81

<210> 19
 <211> 118
 <212> PRT
 <213> Mus musculus

<400> 19

Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1 5 10 15
 Ser Val Lys Ile Ser Cys Arg Ala Phe Gly Tyr Ala Phe Ser Asn Ser
 20 25 30
 Trp Met Asn Trp Val Lys Gln Arg Pro Gly Lys Gly Leu Glu Trp Ile
 35 40 45
 Gly Arg Ile Tyr Pro Gly Asp Gly Glu Thr Asn Asn Asn Gly Lys Phe
 50 55 60
 Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
 65 70 75 80
 Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
 85 90 95
 Ala Arg Gly Tyr Gly Asp Tyr Ser Phe Ala Tyr Trp Gly Gln Gly Thr
 100 105 110
 Leu Val Thr Val Ser Ala
 115

<210> 20
 <211> 118
 <212> PRT
 <213> Mus musculus

<400> 20
 Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
 1 5 10 15
 Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ala Phe Ser Ser Ser
 20 25 30
 Trp Met Asn Trp Val Lys Gln Arg Pro Gly Lys Gly Leu Glu Trp Ile
 35 40 45
 Gly Arg Ile Tyr Pro Gly Asp Gly Glu Thr Asn Asn Asn Gly Lys Phe
 50 55 60
 Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr
 65 70 75 80
 Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
 85 90 95
 Ala Arg Gly Tyr Gly Asp Tyr Ser Phe Ala Tyr Trp Gly Gln Gly Thr
 100 105 110
 Leu Val Thr Val Ser Ala
 115

<210> 21
 <211> 118
 <212> PRT

<213> Mus musculus

<400> 21

Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys Pro Gly Ala
1 5 10 15

Ser Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Ser
20 25 30

Trp Met Asn Trp Val Lys Gln Arg Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45

Gly Arg Ile Tyr Pro Gly Asp Gly Glu Thr Ile Tyr Asn Gly Lys Phe
50 55 60

Arg Val Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Met Asp Ile Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Phe Cys
85 90 95

Ala Arg Gly Tyr Asp Asp Tyr Ser Phe Ala Tyr Trp Gly Gln Gly Thr
100 105 110

Leu Val Thr Val Ser Ala
115

<210> 22

<211> 115

<212> PRT

<213> Mus musculus

<400> 22

Gln Val Gln Leu Gln Gln Pro Gly Thr Glu Leu Val Arg Pro Gly Ala
1 5 10 15

Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asp Tyr
20 25 30

Trp Val Asn Trp Val Lys Gln Arg Pro Gly Arg Gly Leu Glu Trp Ile
35 40 45

Gly Arg Ile His Pro Tyr Asp Ser Glu Thr His Tyr Asn Gln Lys Phe
50 55 60

Lys Asn Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser Thr Ala Tyr
65 70 75 80

Ile Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val Tyr Tyr Cys
85 90 95

Ala Ser Gly Gly Trp Phe Ala Ser Trp Gly Gln Gly Thr Leu Val Thr
100 105 110

Val Ser Ala
115

<210> 23
 <211> 116
 <212> PRT
 <213> Mus musculus

<400> 23
 Asp Val Gln Leu Gln Glu Ser Gly Pro Gly Leu Val Lys Pro Ser Gln
 1 5 10 15
 Ser Leu Ser Leu Thr Cys Thr Val Thr Gly Tyr Ser Ile Thr Ser Asp
 20 25 30
 Tyr Ala Trp Ser Trp Ile Arg Gln Leu Pro Gly Asn Lys Leu Glu Trp
 35 40 45
 Met Gly Tyr Ile Thr Tyr Ser Gly Tyr Ser Ile Tyr Asn Pro Ser Leu
 50 55 60
 Lys Ser Arg Ile Ser Ile Ser Arg Asp Thr Ser Lys Asn Gln Leu Phe
 65 70 75 80
 Leu Gln Leu Asn Ser Val Thr Thr Glu Asp Thr Ala Thr Tyr Tyr Cys
 85 90 95
 Val Gly Gly Tyr Asp Asn Met Asp Tyr Trp Gly Gln Gly Thr Ser Val
 100 105 110
 Thr Val Ser Ser
 115

<210> 24
 <211> 112
 <212> PRT
 <213> Mus musculus

<400> 24
 Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Pro Val Thr Pro Gly
 1 5 10 15
 Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
 20 25 30
 Asn Gly Asn Thr Tyr Leu Tyr Trp Phe Leu Gln Arg Pro Gly Gln Ser
 35 40 45
 Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala Ser Gly Val Pro
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Ala Ala Phe Thr Leu Arg Ile
 65 70 75 80
 Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
 85 90 95
 Leu Glu Tyr Pro Tyr Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 25
 <211> 112
 <212> PRT
 <213> Mus musculus

<400> 25
 Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Pro Val Thr Pro Gly
 1 5 10 15
 Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
 20 25 30
 Asn Gly Asn Thr Tyr Leu Tyr Trp Phe Leu Gln Arg Pro Gly Gln Ser
 35 40 45
 Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala Ser Gly Val Pro
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Ala Ala Phe Thr Leu Arg Ile
 65 70 75 80
 Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
 85 90 95
 Leu Glu Tyr Pro Tyr Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 26
 <211> 112
 <212> PRT
 <213> Mus musculus

<400> 26
 Asp Ile Val Met Thr Gln Ala Ala Pro Ser Ile Pro Val Thr Pro Gly
 1 5 10 15
 Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu His Ser
 20 25 30
 Asn Gly Asn Thr Tyr Leu Tyr Trp Phe Leu Gln Arg Pro Gly Gln Ser
 35 40 45
 Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala Ser Gly Val Pro
 50 55 60
 Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Ala Phe Thr Leu Arg Ile
 65 70 75 80
 Ser Arg Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
 85 90 95
 Ile Glu Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
 100 105 110

<210> 27
 <211> 112
 <212> PRT

<213> Mus musculus

<400> 27

```

Asp Ile Val Met Thr Gln Ala Ala Pro Ser Val Pro Val Thr Pro Gly
1           5           10           15

Glu Ser Val Ser Ile Ser Cys Arg Ser Ser Lys Ser Leu Leu Tyr Ser
          20           25           30

Asn Gly Asn Thr Tyr Leu Tyr Trp Phe Leu Gln Arg Pro Gly Gln Ser
          35           40           45

Pro Gln Leu Leu Ile Tyr Arg Met Ser Asn Leu Ala Ser Gly Val Pro
          50           55           60

Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Ala Phe Thr Leu Thr Ile
65           70           75           80

Ser Ser Val Glu Ala Glu Asp Val Gly Val Tyr Tyr Cys Met Gln His
          85           90           95

Leu Glu Tyr Pro Tyr Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
          100          105          110

```

<210> 28

<211> 108

<212> PRT

<213> Mus musculus

<400> 28

```

Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
1           5           10           15

Glu Lys Val Thr Leu Thr Cys Ser Ala Ser Ser Ser Val Ser Ser Ser
          20           25           30

His Leu Tyr Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Leu Trp
          35           40           45

Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser
          50           55           60

Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Asn Met Glu
65           70           75           80

Thr Glu Asp Ala Ala Ser Tyr Phe Cys His Gln Trp Ser Ser Tyr Pro
          85           90           95

Trp Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys
          100          105

```